**Attorney's Docket No. SPO-611**
**MAIL STOP AMENDMENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| In re Application of: | ) | Group Art Unit: 1714 |
| | ) | |
| SATOH; HIMENO; KAZAMA | ) | Examiner: Tae H. Yoon |
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| Serial No.: 10/088,347 | ) | |
| | ) | |
| Filed: March 18, 2002 | ) | |

For: **PHOTO-CURABLE REPARATIVE MATERIAL FOR DENTAL USE**

## APPENDIX A

Please amend the claims as indicated according to 37 C.F.R. § 1.121 concerning a manner for making claim amendments.

1. (Original) A photocurable dental restorative comprising (i) 100 parts by weight of a polymerizable monomer, (ii) 0.01 to 5 parts by weight of a photopolymerization initiator of acylphosphine oxide, and (iii) 200 to 1900 parts by weight of an inorganic filler, wherein the inorganic filler (iii) is a mixed filler of:

(A) irregular-shaped inorganic particles having an average particle size of not smaller than 0.1 μm but smaller than 1 μm;

(B) spherical inorganic particles having an average primary particle size of not smaller than 0.1 μm but not larger than 5 μm; and

(C) fine inorganic particles having an average primary particle size of not larger than 0.1 μm;

which are so blended as to satisfy the following mass ratios ① to ③:

① $mA/(mB + mC) = 0.2$ to 3

② $mB/(mB + mC) = 0.5$ to 0.99

③ $mC/(mB + mC) = 0.01$ to 0.5

where mA, mB and mC are masses of the inorganic particles (A) to (C).

2. (Original) A photocurable dental restorative according to claim 1, wherein said mixed filler (iii) is obtained by so blending the inorganic particles (A) to (C) as to satisfy the following mass ratios ①' to ③';

①' $mA/(mB + mC) = 0.4$ to 2.3

②' $mB/(mB + mC) = 0.6$ to 0.9

③' $mC/(mB + mC) = 0.1$ to 0.4.

3. (Original) A photocurable dental restorative according to claim 1, wherein in said mixed filler (iii), a maximum size of aggregates of primary particles of the spherical inorganic

particles (B) and a maximum size of aggregates of primary particles of the fine inorganic particles (C) are not larger than 20 μm, respectively, and a total amount of the aggregates thereof is not larger than 20% by volume of the whole mixed filler (iii).

4. (Original) A photocurable dental restorative according to claim 1, wherein said spherical inorganic particles (B) have an average primary particle size of not larger than 1 μm.

5. (Original) A photocurable dental restorative according to claim 1, wherein said fine inorganic particles (C) have an average primary particle size of from 0.05 to 0.09 μm.

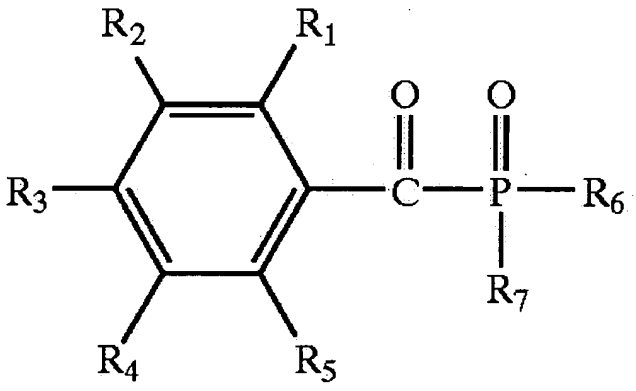
6. (Original) A photocurable dental restorative according to claim 1, wherein said mixed filler (iii) has a volume of the pores of not smaller than 0.08 μm due to strongly aggregated particles of not larger than 0.1 cc/g.

7. (Original) A photocurable dental restorative according to claim 1, wherein said mixed filler (iii) has at least one distribution peak at a position of a particle size of not larger than 0.1 μm and at a position of a particle size of not smaller

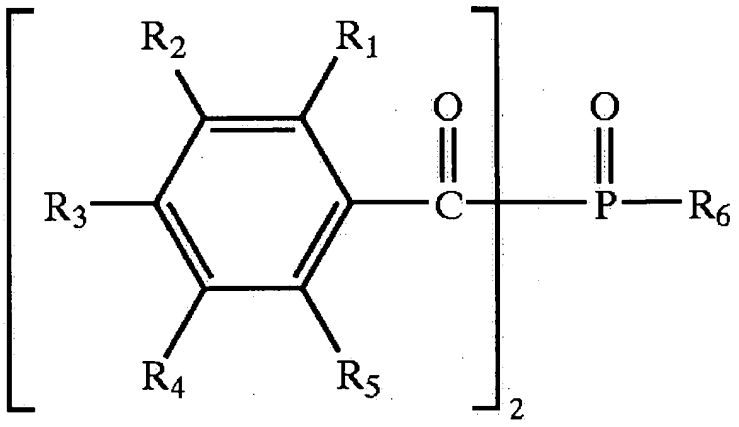
than 0.1 μm but not larger than 1 μm, respectively, on particle size distribution based on the volume of particles, but has no distribution peak at a position of a particle size in excess of 5 μm.

8. (Currently amended) A photocurable dental restorative according to claim 1, wherein said acylphosphine oxide is represented by the following general formula (I) or (II)

(I)



(II)



wherein each of $R_1$, $R_2$, $R_3$, $R_4$ and $R_5$ is any one of the groups selected from the group consisting of

a hydrogen atom,

a halogen atom,

an alkyl group,

an alkoxy group,

an alkylthio group, and

~~a substituted or unsubstituted~~ an unsubstituted aryl group or a substituted aryl group substituted by at least one group selected from the group consisting of

a halogen atom,

an alkyl group and

an alkoxy group,

and each of $R_6$ and $R_7$ is any one of the groups selected from the group consisting of

~~a substituted or unsubstituted~~ a substituted alkyl group or a substituted alkyl group substituted by at least one group selected from the group consisting of

a halogen atom,

an alkyl group and

an alkoxy group,

~~a substituted or unsubstituted~~ a substituted alkenyl group or a substituted alkenyl group substituted by at least one group selected from the group consisting of

a halogen atom,

an alkyl group and

an alkoxy group, and

~~a substituted or unsubstituted~~ an unsubstituted aryl group or a substituted aryl group substituted by at least one group selected from the group consisting of

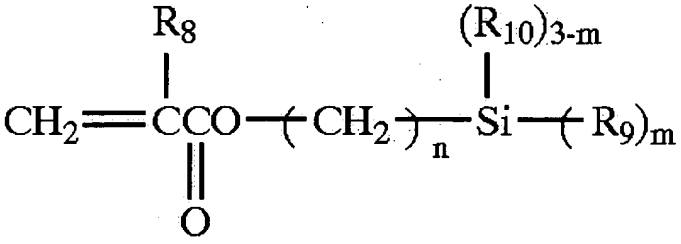
a halogen atom,

an alkyl group and

an alkoxy group.

9. (Original) A photocurable dental restorative according to claim 1, wherein said irregular-shaped inorganic particles (A) are treated for their surfaces with a silane coupling agent represented by the following general formula (III),

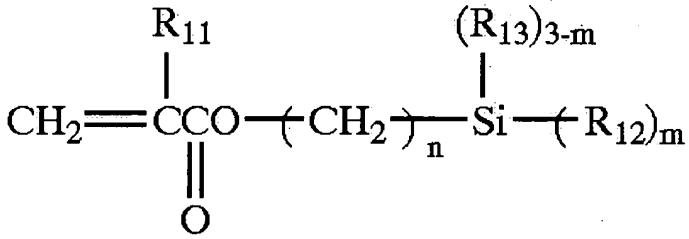
(III)



wherein $R_8$ is a hydrogen atom or a methyl group, $R_9$ is an alkoxy group, a chlorine atom or an isocyanate group, $R_{10}$ is an alkyl group having 1 to 6 carbon atoms, m is an integer of 2 to 3, and n is an integer of 8 to 20,

and said fine inorganic particles (C) are treated for their surfaces with a silane coupling agent represented by the following general formula (IV),

(IV)



wherein $R_{11}$ is a hydrogen atom or a methyl group, $R_{12}$ is an alkoxy group, a chlorine atom or an isocyanate group, $R_{13}$ is an alkyl group having 1 to 6 carbon atoms, m is an integer of 2 to 3, and n is an integer of 2 to 3.

10. (Original) A photocurable dental restorative according to claim 1, wherein an amine compound is contained in an amount of from 0.01 to 5 parts by weight per 100 parts by weight of the polymerizable monomer (i).

11. (Original) A method of producing a photocurable dental restorative by preparing an inorganic filler by mixing:

(A) irregular-shaped inorganic particles having an average particle size of not smaller than 0.1 μm but smaller than 1 μm;

(B) spherical inorganic particles having an average primary particle size of not smaller than 0.1 μm but not larger than 5 μm; and

(C) fine inorganic particles having an average primary particle size of not larger than 0.1 μm;

so as to satisfy the following mass ratios ① to ③:

① $mA/(mB + mC) = 0.2$ to 3

② $mB/(mB + mC) = 0.5$ to 0.99

③ $mC/(mB + mC) = 0.01$ to 0.5

where mA, mB and mC are masses of the inorganic particles (A) to (C),

and by mixing 100 parts by weight of a polymerizable monomer, 0.01 to 5 parts by weight of a photopolymerization initiator of

acylphosphine oxide, and 200 to 1900 parts by weight of said inorganic filler.